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installation instructions

PACKAGED GAS HEATING/ ELECTRIC COOLING UNITS

585A/YAC
585A/YACR
586A/YACX
Sizes 018050 THRU 060150

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Models 585A/YAC, 585A/YACR, and 586A/YACX are single-packaged gas heating/electric cooling horizontal-discharge units.

The 585A/YAC is the standard natural-gas model with a standing pilot and glow-coil ignition. The 585A/YACR is the natural or propane model supplied with the RELITE-type pilot that saves gas by operating only when the wall thermostat calls for heating. The 586A/YACX is the deluxe model with RELITE-type pilot and many value added features for reliability and performance.

These units are designed for outdoor installation either on a rooftop or at ground level on a slab. The cooling section is factory-charged and sealed, minimizing installation time. Installation is easy—connect gas supply, air ducts, condensate drain, high- and low-voltage wiring, and install the air filter.

A full line of rooftop system accessories are available for field installation. These accessories include plenums with factory-supplied high-capacity filter and outside air intake hood, unitized curbs, economizers (both plenum-installed and horizontal), barometric relief dampers, concentric diffuser box assemblies, flexible duct packages, and high-capacity filter racks with filters. When installing these accessories, see installation instruction packaged with them.

Important—Read Before Installing

1. Check all local or other applicable codes for information concerning proximity to property lines, height above roof, obstructions, etc.
2. Make certain power supply available (volts, hertz, and phase) corresponds to that specified on unit rating plate.
3. Check electrical supply provided by utility to be sure that service capacity is sufficient to handle load imposed by this unit.
4. Locate the unit where the vent cap is a minimum of 4 feet from openable windows or doors.
5. The installation must conform with local building codes or, in the absence of local codes, with the National Fuel Gas Code ANSI Z223.1.

GENERAL

The condensing section has been designed and tested in accordance with ARI 210. The appliance design is certified by American Gas Association for use with natural or propane gases with appropriate controls and orifices.

Installation of the unit consists of the following:

I. Moving and Setting Unit In Place
II. Venting
III. Gas Piping
IV. Duct Connections
V. Electrical Connections

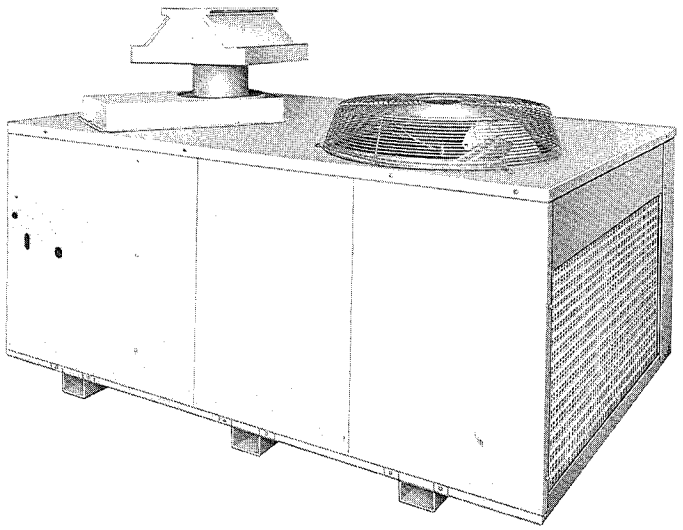


Figure 1—Models 585A/YAC & 585A/YACR, Sizes 048150, 060125, & 060150

VI. Preparing Unit for Startup
VII. Heating Startup and Adjustments
VIII. Cooling Startup and Adjustments
IX. Care and Maintenance

I. MOVING AND SETTING UNIT IN PLACE

Extreme caution should be used to prevent damage when moving the unit. The unit should remain in an upright position during all rigging and moving operations. To facilitate lifting and moving, place the unit in an adequate rope or cable sling.

CAUTION: Be sure to protect the top and sides of the unit when rigging the unit to be lifted. See Figure 4.

A. Rooftop Installation

Place the unit on a level base that is at least 6 inches above the roof to prevent flooding. Consult local codes for installation requirements. Be sure the roof will support the additional weight.

NOTE: See the installation instructions packaged with the accessory plenum and unitized curb when these system accessories are being installed.

B. Ground Level Installation

Place the unit on a level concrete slab with a minimum of 4 inches thickness.

CAUTION: Unit must be mounted level for proper condensate drainage.

C. Clearances

The minimum clearance is 6 inches from the duct side, 24 inches from the condenser coil side, and 30 inches from the remaining two sides of the unit to allow for adequate service space. Minimum clearance from the top is 24 inches.

DIMENSIONS (Inches)

Size	A	B	D	E	F	G	H	J
018050 & 024055	44-5/8	30-3/8	16	10	—	1-1/8	16	7-1/4
024080, 030080, & 036080	44-5/8	40-3/8	19	10	—	1-3/8	13-1/4	8-7/8
036100, 036125, 042100, 042125, & 048125	58-5/8	44-5/8	24	14	—	1-3/8	13-1/4	8-7/8
048150, 060125, & 060150	66-7/8	44-5/8	32	10	15-3/4	1-3/8	13-1/4	8-7/8

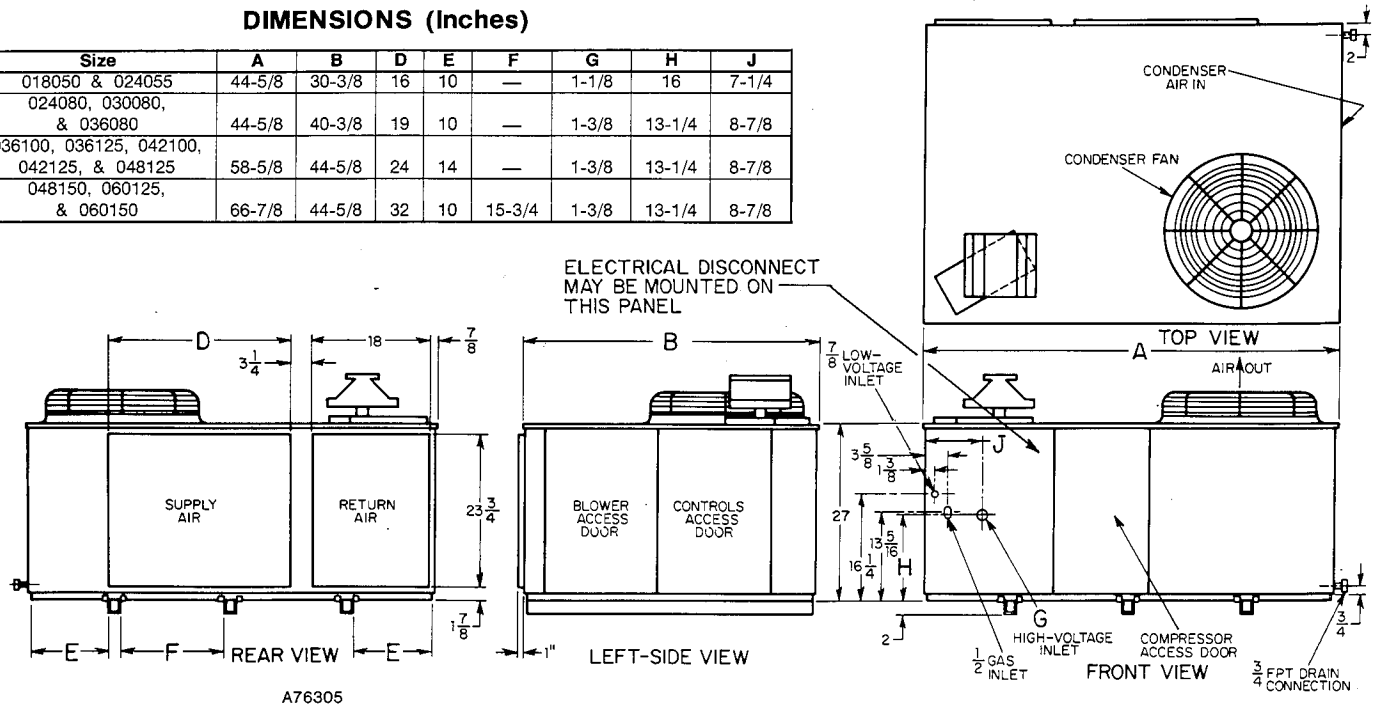


Figure 2—Dimensional Drawing for Models 585A/YAC, 585A/YACR, & 586A/YACX

TABLE I—RATING, PERFORMANCE, & FILTERS

MODEL	585A/YAC, 585A/YACR, & 586A/YACX												
SIZE	018050	024055	024080	030080	036080	036100	036125	042100	042125	048125	048150	060125	060150
Rated Cooling Capacity (Btuh)*	18,500	23,000	24,000	29,000	37,000	35,500	35,500	42,000	42,000	47,000	47,000	59,000	59,000
Heating Input (Btuh)†	50,000	55,000	80,000	80,000	80,000	100,000	125,000	100,000	125,000	125,000	150,000	125,000	150,000
Heating Bonnet Capacity (Btuh)†	37,500	41,250	60,000	60,000	60,000	75,000	93,750	75,000	93,750	93,750	112,500	93,750	112,500
Temperature Rise Range (°F)	45-75	45-75	45-75	45-75	45-75	45-75	45-75	45-75	45-75	45-75	45-75	45-75	45-75
Cooling Airflow (CFM)*	690	850	900	1000	1200	1300	1300	1550	1550	1600	1600	2200	2200
Ext Static Press. (In. wc) (1)*	0.4/0.8	0.4/0.8	0.4/0.8	0.4/0.8	0.4/0.8	0.4/0.8	0.4/0.8	0.4/0.8	0.4/0.8	0.4/0.8	0.4/0.8	0.4/0.8	0.4/0.8
Heating Airflow (CFM) (2)	580	635	925	925	925	1155	1445	1155	1445	1445	1735	1445	1735
ARI Sound Rating Number‡	19	19	19	19	19	20	20	20	20	20	20	21	21
Cooling EER (Btuh/Watt)*	7.1	7.2	7.5	7.0	7.0	7.5	7.5	7.2	7.2	7.0	7.0	7.3	7.3
Minimum Filter Size (Sq. In.)**	280	310	445	445	445	555	695	555	695	695	835	695	835

*Rated in accordance with ARI Standard 210-75.

†Natural or propane gas at sea level.

‡Rated in accordance with ARI Standard 270-75. The SRN is one number lower at outdoor temperatures below 90°F for the 586A/YACX units, and for the 585A/YAC and 585A/YACR units with the field-installed 40°F low-ambient kit.

**Field-supplied air filter area shown is for standard-type filter; for high-capacity filters, area may be reduced to 65% of value shown.

(1)Ext static press. rating is 0.4 in. wc for 585A/YAC and 585A/YACR—0.8 in. wc for 586A/YACX.

(2)At 60°F temperature rise.

TABLE II—ELECTRICAL DATA (Sizes 018050 Thru 036100)

MODEL	585A/YAC, 585A/YACR, & 586A/YACX									
SIZE	018050	024055		024080		030080	036080		036100	
Unit Volts-Hertz-Phase	208/230-60-1	208-60-1	230-60-1	208-60-1	230-60-1	208-230-60-1	230-60-1	208-230-60-3	230-60-1	208/230-60-3
Operating Voltage Range	187-253	187-229	207-253	187-229	207-253	197-253	207-253	197-253	207-253	187-253
Total Full Load Amps										
585A/YAC & 585A/YACR	13.2	16.2	15.8	17.9	16.4	22.6	22.6	20.3	23.8	17.5
586A/YACX	13.2	16.2	15.8	17.9	16.4	22.6				
Total Power Consumption (Watts)	2600	3200	3200	3200	3200	4150	5300	5300	4750	4750
Max Branch Circuit Fuse Size (Amps)										
585A/YAC & 585A/YACR	25	30	30	30	30	40	50	30	45	30
586A/YACX	25	30	30	30	30					
Unit Ampacity for Wire Sizing										
585A/YAC & 585A/YACR	16.7	20	18	21	19.6	27	30.6	24.3	28	20
586A/YACX	16.7	20	18	21	19.6	27				
Min Wire Size (AWG)*										
585A/YAC & 585A/YACR	12	12	12	10	12	10	8	10	10	12
586A/YACX	12	12	12	10	12	10				
Max Length (Ft)*										
585A/YAC & 585A/YACR	97/107	79	89	114	86	90/100	159	123/136	94	90/99
586A/YACX	97/107	79	89	114	86	90/100				

*Use copper wire only. Wire size is based on 60° copper conductor at 86°F (30°C) room temperature and ampacity shown in table. If other than 60°C copper conductor is used, if ambient temperature is above 86°F, or if voltage drop of wire exceeds 2% of unit rated voltage, determine wire size from ampacity shown and the National Electric Code. Wire lengths shown are measured one way along the wire path between unit and service panel for minimum voltage drop.

TABLE III—ELECTRICAL DATA (Sizes 036125 Thru 048125)

MODEL	585A/YAC, 585A/YACR, & 586A/YACX											
SIZE	036125		042100			042125			048125			
Unit Volts-Hertz-Phase	230-60-1	208/230-60-3	230-60-1	208-60-3	230-60-3	230-60-1	208-60-3	230-60-3	230-60-1	208-60-3	230-60-3	460-60-3†
Operating Voltage Range	207-253	187-253	207-253	187-229	207-253	207-253	187-229	207-253	207-253	187-229	207-253	414-506
Total Full Load Amps												
585A/YAC & 585A/YACR	23.8	17.5	27.8	22.5	19.8	27.8	22.5	19.8	31.8	24.8	21.8	11.4
586A/YACX												
Total Power Consumption (Watts)	4750	4750	5800	5800	5800	5800	5800	5800	6700	6700	6700	6700
Max Branch Circuit Fuse Size (Amps)												
585A/YAC & 585A/YACR	45	30	50	40	35	50	40	35	60	45	40	20
586A/YACX												
Unit Ampacity for Wire Sizing												
585A/YAC & 585A/YACR	28	20	33	26	23	33	26	23	38.7	29	26	13
586A/YACX												
Min Wire Size (AWG)*												
585A/YAC & 585A/YACR	10	12	8	10	10	8	10	10	8	10	10	14
586A/YACX												
Max Length (Ft)*												
585A/YAC & 585A/YACR	94	90/99	129	111	140	129	111	140	113	102	127	193
586A/YACX												

TABLE IV—ELECTRICAL DATA (Sizes 048150 Thru 060150)

MODEL	585A/YAC, 585A/YACR, & 586A/YACX										
SIZE	048150				060125			060150			
Unit Volts-Hertz-Phase	230-60-1	208-60-3	230-60-3	460-60-3†	230-60-1	206-60-3	230-60-3	230-60-1	208-60-3	230-60-3	460-60-3†
Operating Voltage Range	207-253	187-229	207-253	414-506	207-253	187-229	207-253	207-253	187-229	207-253	414-506
Total Full Load Amps											
585A/YAC & 585A/YACR	34.8	27.4	24.5	11.3	41.5	31.4	28.5	41.5	31.4	28.5	14.6
586A/YACX											
Total Power Consumption (Watts)	6700	6700	6700	6700	8100	8100	8100	8100	8100	8100	8100
Max Branch Circuit Fuse Size (Amps)											
585A/YAC & 585A/YACR	60	45	40	20	80	50	50	80	50	50	25
586A/YACX											
Unit Ampacity for Wire Sizing											
585A/YAC & 585A/YACR	41	32	28	13	50	37	33	50	37	33	17
586A/YACX											
Min Wire Size (AWG)*											
585A/YAC & 585A/YACR	6	8	10	14	6	8	8	6	8	8	12
586A/YACX											
Max Length (Ft)*											
585A/YAC & 585A/YACR	161	145	113	194	135	127	155	135	127	155	239
586A/YACX											

*Use copper wire only. Wire size is based on 60° copper conductor at 86°F (30°C) room temperature and ampacity shown in table. If other than 60°C copper conductor is used, if ambient temperature is above 86°F, or if voltage drop of wire exceeds 2% of unit rated voltage, determine wire size from ampacity shown and the National Electric Code. Wire lengths shown are measured one way along the wire path between unit and service panel for minimum voltage drop.
†Not available for 585A/YAC.

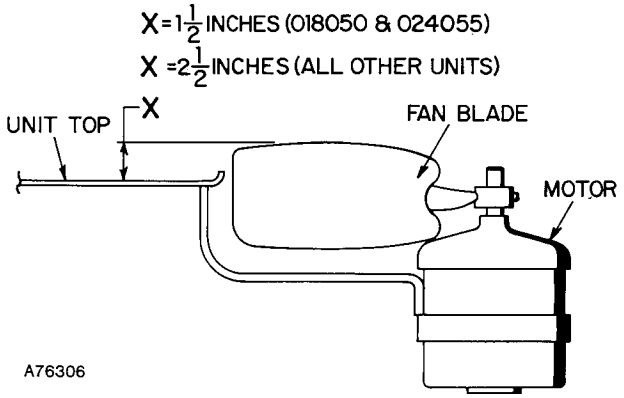


Figure 3—Condenser Fan Setting

CAUTION: The 24-inch side clearance stipulation assures unrestricted airflow to the condenser fan inlet. Any restriction at the inlet grille can be detrimental to compressor life.

The condenser fan discharge is through the top of the unit. When installing the unit on the ground, do not locate unit in a corner or under a complete roof cover such as a carport. Minimum clearance under a normal house roof construction is 24 inches. Select a location for the unit where ice and snow will not fall from an overhang and damage the unit top or fan blade.

There is no minimum clearance requirement for the bottom of the unit; therefore, combustible materials can be used for supports.

D. Base Rails

The base rails are easily removed for a lower profile installation or a better fit to angle iron frames used in some rooftop installations. To remove the base rails, simply remove the screws on either end of the rails.

NOTE: The base rails must not be removed when installing the accessory unitized curb and plenum.

E. Condensate Drain

The unit is designed to dispose of condensate water through a 3/4-inch FPT connection on the drain pan. See Figure 2 for location. It is recommended that a 3-inch trap be installed in the condensate drain line to avoid improper drainage. The trap should be as close to the coil as possible. Make sure that the top of the trap is at least 2 inches lower than the drain pan connection to prevent the drainpan from overflowing. Prime the trap with water and check the condensate line for leaks. See Figure 5.

If the installation requires draining the condensate away from the roof or the building, connect a minimum of 7/8-inch OD copper tubing, 3/4-inch galvanized pipe, or 7/8-inch plastic pipe, and pitch downward at a slope of 1 inch in every 10 feet of horizontal run.

CAUTION: Do not undersize condensate drain connection.

Consult local codes for additional restrictions and/or precautions.

II. VENTING

NOTE: The vent cap assembly is shipped in the blower com-

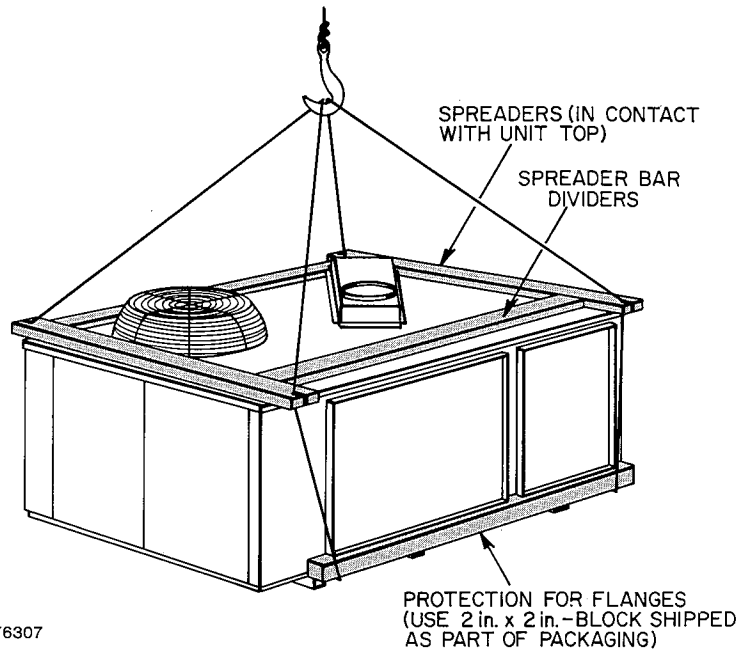

SPREADERS (IN CONTACT WITH UNIT TOP)
SPREADER BAR DIVIDERS
PROTECTION FOR FLANGES (USE 2 in. x 2 in.-BLOCK SHIPPED AS PART OF PACKAGING)
A76307

Figure 4—Suggested Rigging

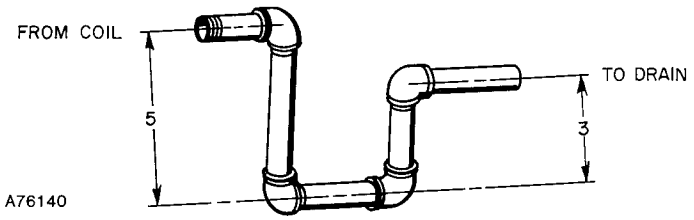


Figure 5—Condensate Trap

partment with sizes 018050 and 024055. Remove the blower access door to locate the assembly. This assembly is shipped in the control compartment with all other sizes. Remove the control access door to locate the assembly. See Figure 2 for the location of these access doors.

CAUTION: The venting system has been designed to ensure proper venting. The vent cap assembly must only be installed as indicated in this section of the unit installation instructions.

NOTE: Screw holes in the vent stack extension and the vent cap are *not* symetrically located to ensure proper orientation when installing these components.

Install the vent cap assembly as follows:

1. Place vent stack extension through hole in combustion air duct and orient screw holes in base of vent stack extension with holes in unit top. See Figure 6.
2. Secure vent stack extension to unit top with screws provided.
3. Place vent cap onto vent stack extension and orient screw holes in vent cap with holes in vent stack extension.See Figure 6.
4. Secure vent cap in place with screws provided.
5. Form flat wire screen provided into circular shape around protruding lip of combustion air duct. See Figure 6.
6. Bend wire ends through holes of screen mesh to secure screen in place.

III. GAS PIPING

A separate gas supply line should be installed to run directly from meter to heating section. Check the local utility for recommendations concerning existing lines. Choose a supply pipe large enough to keep pressure loss as low as practical. Never use pipe smaller than gas connection to heating section. Observe local codes for all gas pipe installations. Refer to the national codes indicated on the first page of the instructions in the absence of local building codes. The following are pertinent recommendations:

1. Avoid low spots in long runs of pipe. It is best to grade all pipe 1/4 inch in every 15 feet to prevent traps. All horizontal runs should grade downward to risers. Risers should be used to connect to heating section and to meter.
2. Install drip leg in riser leading to heating section. Drip leg will function as trap for dirt and condensate. Drip legs should be installed where condensate will not freeze.
3. Install manual shut-off valve in gas supply pipe near heating section. Gas supply pipe enters unit through access hole provided. See Figure 2 for location. Gas connection to unit is made to 1/2-inch FTP elbow on gas valve. See Figure 7.
4. Where local codes permit, we recommend using flexible gas pipe to make connection between rigid gas piping and unit gas valve to ensure proper alignment between manifold orifices and burners.

CAUTION: Unstable operation may occur, particularly under high wind conditions, when the gas valve and manifold assembly are forced out of position while connecting inproperly routed rigid gas piping to the gas valve.

5. Install ground joint union close to heating section between gas controls manifold and manual shut-off valve.
6. Support all piping with appropriate hangers, etc. Use minimum of one hanger in every 6 feet. For pipe size other than 1/2 inch, follow recommendations of the national codes.
6. Use joint compound (pipe dope) that is resistant to action of liquefied petroleum gases.

NOTE: Teflon tape is not recommended.

7. After all connections are made, use soap-and-water solution to check for leaks (or method specified by local utility regulations).

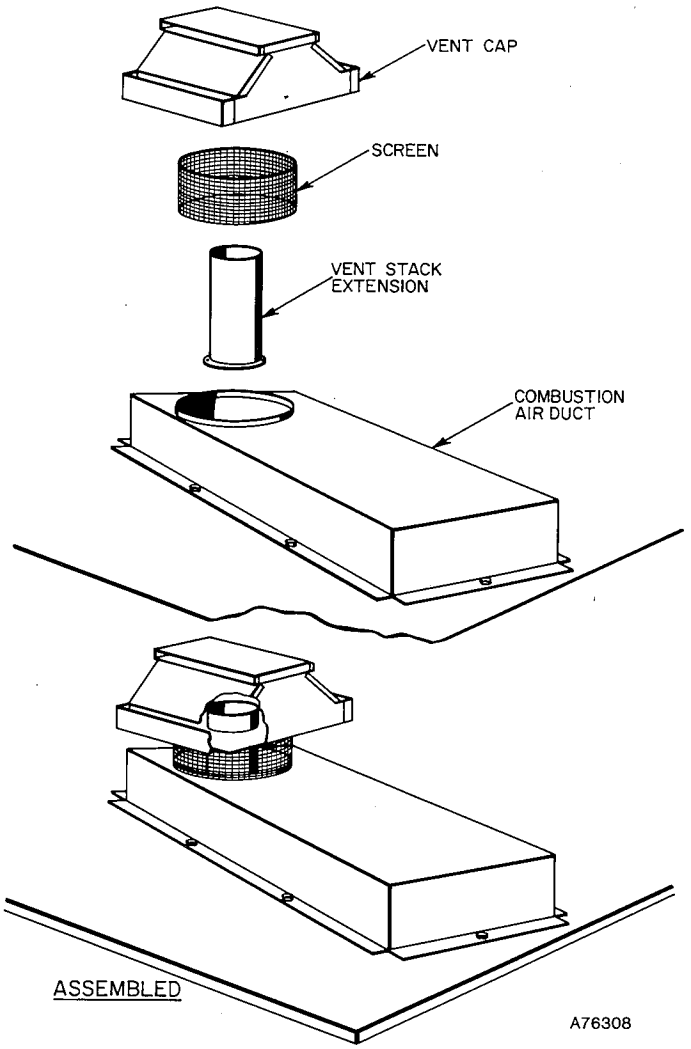


Figure 6—Vent Cap Assembly

WARNING: Never use a match or other open flame.

CAUTION: A backup wrench should be used on the connecting end of the shut-off cock to avoid strain on, or distortion of, the gas control piping.

IV. DUCT CONNECTIONS

The ductwork may be screwed or bolted to the unit flange with suitable gaskets to insure an airtight seal. Be sure metal overlaps the flange on the unit. See Figures 8, 9, and 10 for illustrations of typical installations.

CAUTION; When drilling duct flange fastening holes, use care to avoid puncturing evaporator coil. Properly insulate and waterproof all ductwork external of the structure.

NOTE: When installing the accessory plenum, unitized curb, flexible ducts, or other rooftop system accessories, see installation instructions for that specific accessory.

All openings in the structure must be properly flashed and vibration-isolated in accordance with local codes and good building practices. Provide supply and return ductwork with an approved vibration eliminator.

NOTE: External filter must be supplied and installed where easily accessible for service. For recommended filter area, see Table I.

V. Electrical Connections

All electrical connections must be made in accordance with National Electrical Code and local electrical codes governing such wiring.

The unit must be electrically grounded in accordance with the National Electrical Code, ANSI C1-1975, when installed if an external electrical source is utilized.

WARNING: The unit cabinet must have an uninterrupted or unbroken electrical ground to minimize personal injury if an electrical fault should occur. This may consist of electrical wire or approved conduit when installed in accordance with existing electrical codes.

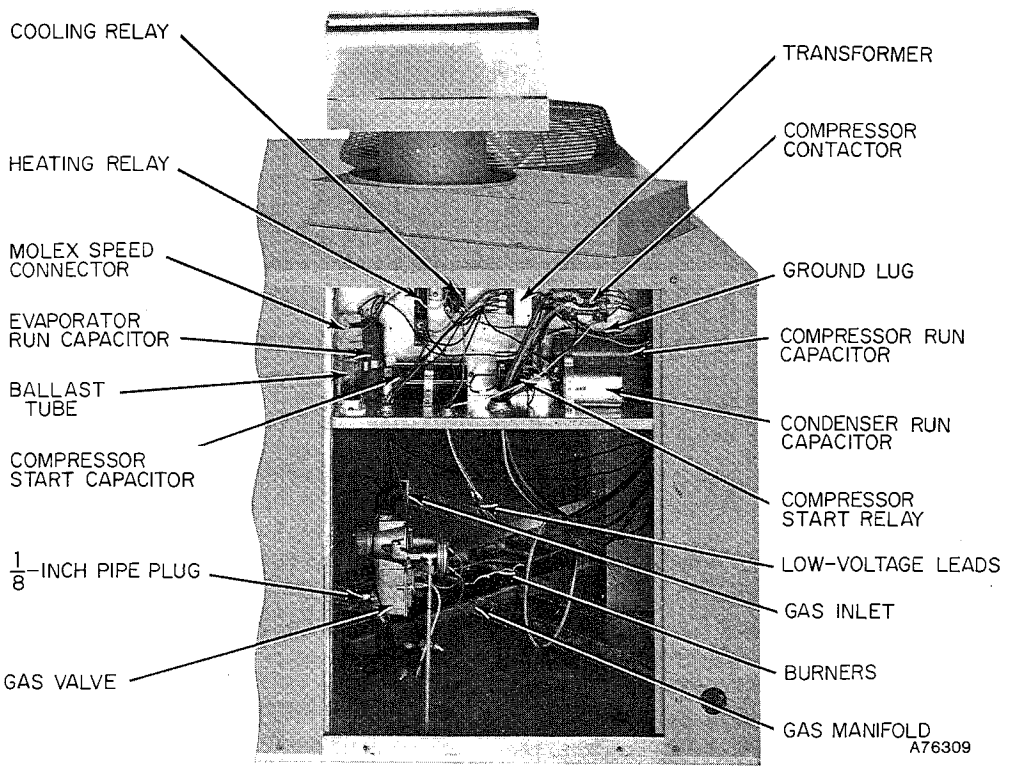


Figure 7—Partial Left-Side View with Control Access Door Removed

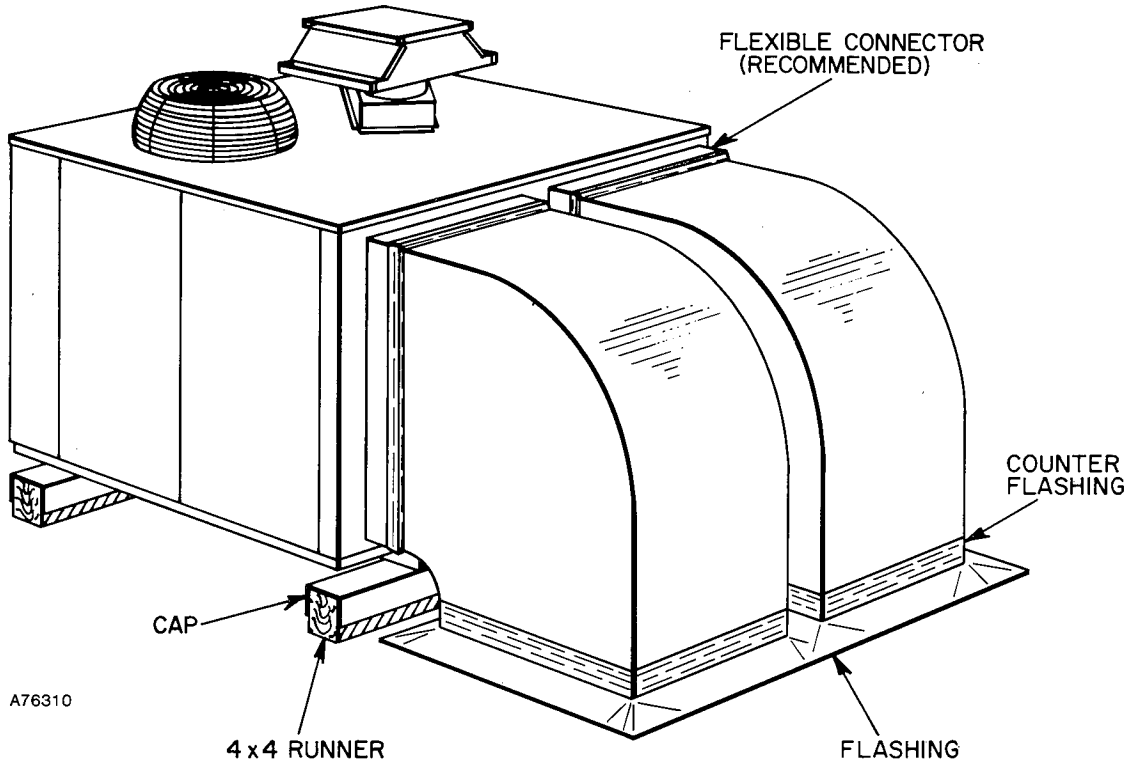


Figure 8—Typical Rooftop Installation on Flat Roof

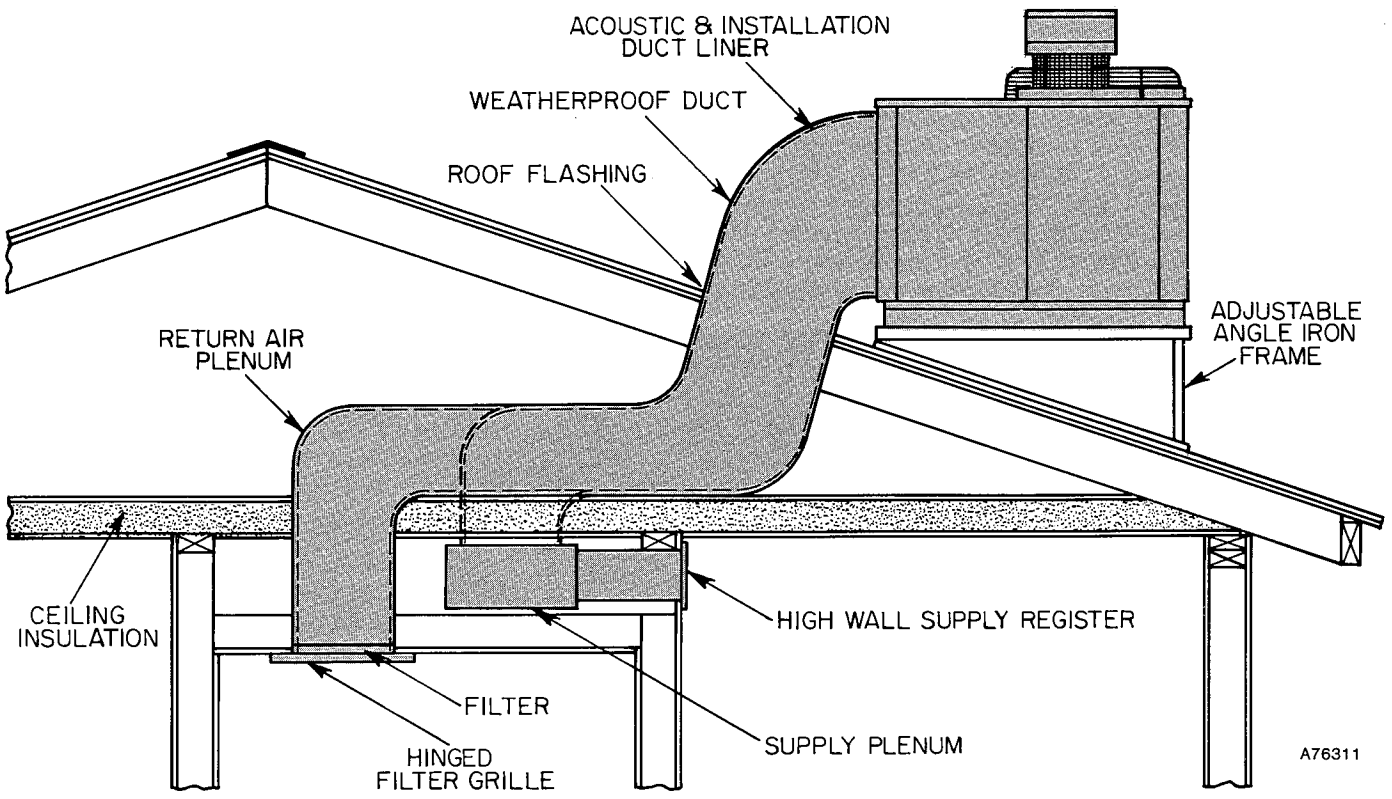


Figure 9—Typical Rooftop Installation on Pitched Roof

A separate electrical line with a fused disconnect switch mounted in a convenient location should be used for this installation. Refer to unit rating plate for maximum fuse size.

CAUTION: Copper conductor is the only type of wire that is to be connected between the electrical disconnect and the unit contactor. Do not use aluminum wire. Connect ground lead to ground lug in control box for safety.

NOTE: Use UL-approved conduit and conduit connector for connecting supply wire to unit to obtain proper grounding.

A. High-Voltage Connections

Proceed as follows to complete high-voltage connections:

1. Run high-voltage leads from fused disconnect through high-voltage inlet hole provided in control corner panel.

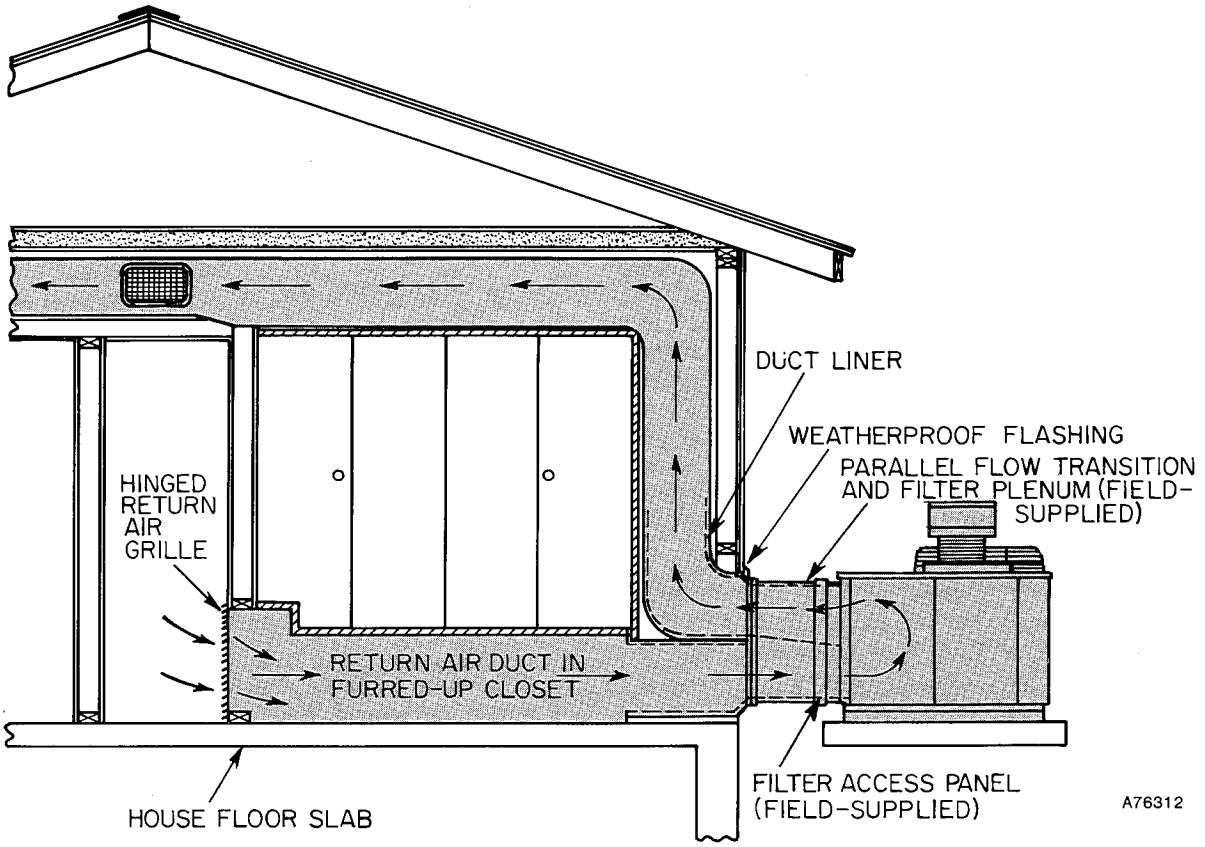


Figure 10—Typical Ground Level Installation Through Single Closet

See Figure 2 for location of panel and hole.

NOTE: A suitable conduit fitting should be mounted to the unit at this hole.

NOTE: The fused disconnect may be mounted directly on the control corner panel. To mount the disconnect on this panel, align one of the disconnect box knockouts with the unit high-voltage inlet hole and secure the box to the panel. Route the wiring from the disconnect through the aligned knockout and unit inlet.

WARNING: Ensure that the drill does not damage any components when drilling through the panel.

2. Run high-voltage leads to unit control box and connect leads to contactor. See unit wiring label and Figure 11.

NOTE: On 3-phase units, the third power lead is connected to the brown high-voltage pigtail lead. See unit wiring label and Figure 11.

When the 018050-size unit is to be operated at 208 volts, it must be rewired at the Molex plug connector of both the evaporator and condenser motor, and at the unit transformer.

WARNING: Make sure the power supply to the unit is switched **OFF** before making any wiring changes.

NOTE: Molex plug connector leads may be disconnected by inserting a small screwdriver, or similar bladed tool, into the connector and depressing the catch on the terminal. When inserting a lead, be sure the catch on the terminal is seated into the connector.

The 018050-size unit evaporator motor leads are wired at the connector as shown in Figure 12. The yellow and orange leads are interchanged when operating at 208 volts. See unit wiring label. See Figure 7 for connector location.

The 018050-size unit condenser motor must have the red and black motor leads changed at the plug connector when operating at 208 volts. See the unit wiring label. On the 018050-size unit, the orange lead running to the primary side of the unit transformer must be connected to the red transformer tap when operating at 208 volts. See the unit wiring label.

B. Low-Voltage Connections

CAUTION: When thermostat leads are run in the same conduit with the high-voltage leads, they must be insulated for the highest voltage contained with the conduit.

If the low-voltage leads from the thermostat are run separately, enter the unit through the grommeted hole provided in the control corner panel. See Figure 2 for the hole location.

Connect the low-voltage thermostat leads to the flagged pigtail leads that run through a hole in the bottom of the unit control box. See Figures 7 and 11.

NOTE: Connect thermostat to unit using NO. 18 AWG "color-coded" insulated wires. If thermostat is located more than 50 feet from unit, use No. 16 AWG wire.

Use thermostats and subbases shown in Figure 11. Set heat anticipator to 0.8 amps.

VI. PREPARING UNIT FOR STARTUP

Proceed as follows to prepare the unit for startup:

1. Remove all service access panels and check for shipping damages, such as broken lines, loose parts, disconnected wires, etc.
2. Read and follow instructions on all WARNING, CAUTION, AND INFORMATION labels and tags attached to unit; such as motor rotation labels, blower rotation labels, and vent instruction tag.

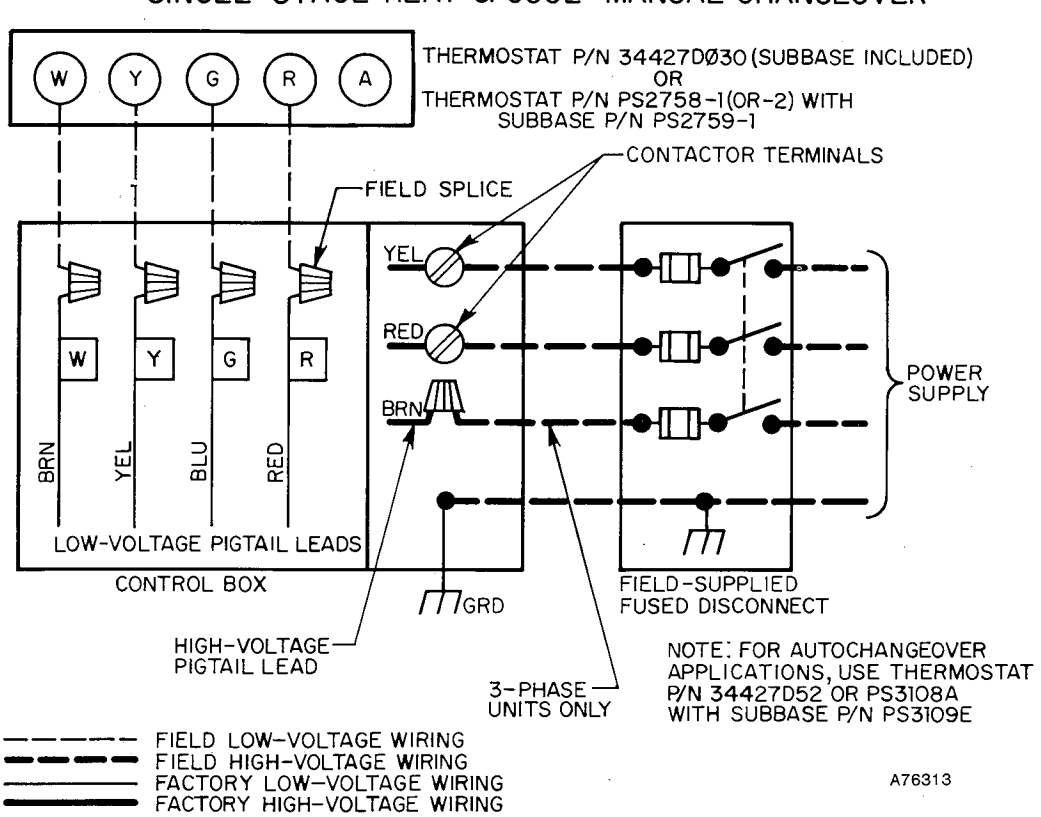


Figure 11—High- & Low-Voltage Connections

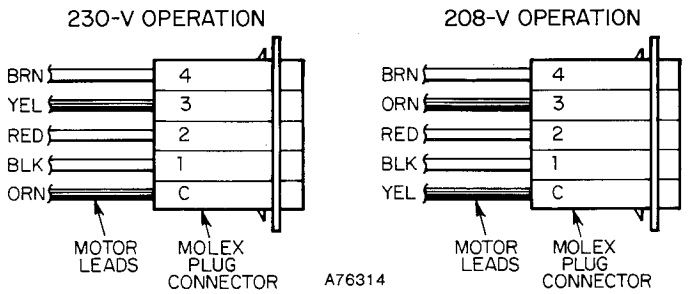


Figure 12—Evaporator Motor Molex Plug Connections for 018050-Size Unit

3. Make certain gas supply has been purged and all gas piping checked.

WARNING: Do not purge into the combustion chamber. Do not use a match or other open flame to check for leakage.

4. Check to be sure all wiring connections, including factory connections, have been completed and are tight.
5. Inspect all supply ducts and grilles to be sure they are adjusted properly.
6. Check to be sure air filters are in place.

VII. HEATING STARTUP AND ADJUSTMENTS

CAUTION: Complete the steps in Section VI before starting unit.

CAUTION: Do not jumper any safety devices when operating unit.

Follow the instructions on the unit rating plate for starting the heating section.

NOTE: On all 3-phase units, make certain blower rotates in same direction as shown on arrow rotation label attached to blower. If blower rotates in opposite direction, reverse any two blower motor leads or any two line-voltage leads for correct rotation.

A. Adjusting Gas Input (Natural Gas Furnace)

The gas input should agree with that shown on the unit rating plate. The burners are equipped with fixed orifices.

NOTE: The rating shown on the rating plate is for altitudes up to 2000 feet above sea level. For elevations above 2000 feet, reduce ratings 4% for each 1000 feet above sea level. The main burner orifices must be changed to a smaller size.

One of the two following methods may be used to adjust the input on a natural gas unit.

1. Measuring Gas Flow at Meter

All other gas appliances must be turned off when measuring gas flow at meter to check the input. Proceed as follows:

a. Determine number of seconds for gas meter test dial to make one revolution.
b. Divide 3600 by number of seconds in step a.
c. Multiply result of Step b by the number of cubic feet shown for one revolution of test dial. This gives cubic feet of gas flow per hour.
d. Multiply result to Step c by Btu heating value of gas. Consult local utility for heating value of gas.

This is the total measured input in Btuh. Compare this value with input rating shown on the unit rating plate.

Example: Suppose the size of test dial is 1 cubic foot; it takes 30 seconds to complete one revolution; heating value of gas 1050 Btu per cubic foot. Proceed as follows:

a. 30 seconds to complete one revolution.
b. 3600 divided by 30 equals 120.
c. 120 times 1 equals 120 cubic feet of gas flow per hour.
d. 120 times 1050 equals 126,000-Btuh input.

If the input rating shown on the unit rating plate was 125,000 Btuh, only minor changes would have to be made at the pressure regulator to bring unit within its rated input.

If the measured input does not agree with the value on unit rating plate, the gas pressure regulator may be adjusted as follows:

To increase input: Remove regulator sealing cap and turn gas pressure regulator adjusting screw clockwise. Replace cap.

To decrease input: Remove regulator sealing cap and turn gas pressure adjusting screw counterclockwise. Replace cap.

CAUTION: Do not redrill orifices under any circumstances.

2. Measuring Manifold Pressure

A water manometer is required when using this method. Proceed as follows when measuring manifold pressure and adjusting gas input:

CAUTION: If spring manometer is used, make sure manometer is calibrated.

a. Turn off gas to unit.
b. Remove 1/8-inch hex-head pipe plug at outlet of gas valve and connect manometer at this point. See Figure 7 for location of plug.
c. Turn on gas to unit. With unit operating and burners fired, adjust pressure regulator for manifold pressure of 3.5 inches water column.

NOTE: The gas pressure regulator may be adjusted as described above.

CAUTION: The units are equipped with fixed orifices to give correct input at 3.5 inches water column with the heating value of natural gas at 1000 Btu. **Do not redrill orifices under any circumstances.**

d. Turn off gas to unit. Remove manometer from gas valve and replace 1/8-inch square-head pipe plug removed in step b. Turn on gas to unit.

B. Adjusting Gas Input (Propane Gas Furnace)

The propane gas unit is not equipped with a pressure regulator. The regulator for a propane unit is located at the supply tank.

The burner orifices are sized for rated input when the manifold pressure is 11.0 inches wc.

Adjust input as follows:

1. Turn off gas to unit.
2. Remove 1/8-inch hex-head pipe plug at outlet of gas valve and connect manometer at this point. See Figure 7 for location of plug.
3. Turn on gas to unit. With unit operating and burners fired, adjust pressure regulator at supply tank for 11.0 inches water column.
4. Turn off gas to unit. Remove manometer and replace 1/8-inch square-head pipe plug removed in step 2. Turn on gas to unit.

C. Adjusting Burner Air Shutters

To adjust the primary air to each burner, partially close the air shutter until there is a slight yellow tip on the top of the flame, then open the air shutter until the yellow tip just disappears. This should be done after the burners have been operating at full input for 5 or 10 minutes (approximately). Secure shutters with locking screws after adjusting primary air to each burner.

D. Blower Fan Relay (Heating)

The heating blower fan relay is located in the control box and is adjustable to permit lengthening or shortening the "off" cycle. The "on" cycle is automatically adjusted as the "off" cycle is changed.

The fan control adjusting lever is factory-set at the center position and should give optimum performance in most installations. However, on unusual installations, or where the line voltage is considerably above or below the rated output, it may be necessary to increase or decrease the length of time blower remains on. For longer blower operation, move the adjusting lever toward the MAX OFF position. In this position, the control makes contact sooner and takes the maximum time to break contact. For shorter blower operation, move the lever in the opposite direction.

E. Airflow and Temperature Rise

The heating section is designed for operation within a temperature rise range of 45°F to 75°F.

Temperature rise is the difference of the air temperature in the return duct and the air temperature in the discharge duct at the unit.

The external static pressure against which the blower is operating is the difference in pressure at the return air duct and the supply air duct at the unit.

All 585A/YAC, 585A/YACR, and 586A/YACX units are equipped with direct-drive blower motors. Motor speeds have been factory-set for both heating and cooling to obtain optimum performance. See Tables VI and VII to determine airflow. On most units the motor speeds cannot be adjusted; however, some units do have unused speed taps that are available. See the unit wiring label.

Table V shows the temperature rise of each size at various airlfow rates.

F. Sequence of Operation (Heating)

The following sequence of operation pertains to models 585A/YAC and 585A/YACR, 208- and 230-V units, sizes: 036080, 036125, 042100, 048125, and 048150; however, the sequence of operation of all units is very similar. Refer to the line-to-line wiring diagram in Figure 13 for units with glow-coil pilot or in Figure 14 for units with RELITE pilot.

NOTE: Although the unit wiring may vary slightly from that shown in Figures 13 and 14, the sequence of operation will not be affected.

With the thermostat system switch in HEAT and FAN switch in AUTO, the sequence of operation is as follows:

On units equipped with the glow-coil pilot (Figure 13), gas flows to the pilot (6B) and the pilot pressure switch (7P) when the pilot gas cock is open. The gas flow to the pilot pressure switch closes its contacts, which completes a 24-volt circuit to the ballast tube (11K) and the glow coil of the pilot (6B). The energized glow coil ignites the pilot (6B) after approximately one minute. Heat from the pilot flame opens the pilot's normally closed contacts and closes its normally open contacts. This action breaks the ignition circuit and electrically connects one side of the transformer (1B) secondary to one side of the gas valve (5A). The unit is now ready for a "call for heat" from the thermostat. If the standing pilot goes out for any reason, the above sequence is repeated.

TABLE V—AIRFLOW (CFM) AT INDICATED TEMPERATURE RISE AND RATED INPUT

585A/YAC, 585A/YACR, & 586A/YACX Size	Heating Input Btuh	Temperature Rise (°F)						
		45	50	55	60	65	70	75
018050	50,000	770	695	630	580	535	495	465
024055	55,000	850	765	695	635	590	545	510
024080, 030080, & 036080	80,000	1235	1110	1010	925	855	795	740
036100 & 042100	100,000	1545	1390	1265	1155	1070	990	925
036125, 042125, 048125, & 060125	125,000	1930	1735	1580	1445	1335	1240	1155
048150 & 060150	150,000	2315	2085	1895	1735	1605	1490	1390

TABLE VI—AIR DELIVERY (CFM) AT INDICATED EXTERNAL STATIC PRESSURE AND VOLTAGE WITH FIELD-SUPPLIED FILTER*

585A/YAC, 585A/YACR, & 586A/YACX													
	Application—Motor Speed	External Static Pressure—Inches wc											
		0.1		0.2		0.3		0.4		0.5		0.6	
Size	Tap†	208V	230V	208V	230V	208V	230V	208V	230V	208V	230V	208V	230V
018050	Heating-L	770	710	740	690	700	660	650	620	590	580	510	510
	Cooling-L	750	700	720	680	680	620	620	600	550	550	—	—
024055	Heating-L	770	710	740	690	700	660	650	620	590	580	510	510
	Cooling-H	940	870	890	830	850	790	790	730	—	—	—	—
024080	Heating-M	930	1010	900	970	860	930	820	880	770	830	—	770
	Cooling-L	810	890	780	860	740	830	700	790	—	—	—	—
030080	Heating-M	930	1010	900	970	860	930	820	880	770	830	—	770
	Cooling-H	1170	1200	1120	1150	1060	1090	990	1030	920	950	—	—
585A/YAC & 585A/YACR													
036080	Heating-L	990	1160	970	1100	950	1060	910	1010	870	940	820	830
	Cooling-H	1430	1440	1370	1370	1300	1300	1240	1220	1170	1140	—	—
036100	Heating-L	1330	1390	1290	1350	1240	1310	1190	1260	1140	1200	1070	1110
	Cooling-L	1310	1370	1270	1310	1220	1280	1160	1230	1100	1160	—	1050
036125	Heating-H	1570	1620	1510	1560	1450	1500	1390	1430	1320	1360	1230	1280
	Cooling-L	1310	1370	1270	1310	1220	1280	1160	1230	1100	1160	—	1050
042100	Heating-L	1330	1390	1290	1350	1240	1310	1190	1260	1140	1200	1070	1110
	Cooling-H	1540	1590	1490	1530	1430	1470	1360	1400	1280	1320	—	1240
042125	Heating-H	1570	1620	1510	1560	1450	1500	1390	1430	1320	1360	1230	1280
	Cooling-H	1540	1590	1490	1530	1430	1470	1360	1400	1280	1320	—	1240
048125	Heating-L	1440	1440	1410	1400	1360	1360	1310	1310	1250	1250	1170	1160
	Cooling-H	1670	1710	1620	1660	1560	1590	1480	1510	—	—	—	—
048150	Heating-H	2120	2160	2050	2090	1970	2020	1880	1930	1790	1830	1660	1690
	Cooling-M	1890	1970	1840	1910	1790	1840	1710	1760	1610	1630	—	—
060125	Heating-L	—	—	1560	1680	1540	1650	1500	1600	1440	1540	1330	1450
	Cooling-H	2080	2120	2000	2050	1920	1970	1830	1870	—	1750	—	—
060150	Heating-M	1910	2000	1870	1950	1820	1890	1750	1810	1670	1710	1530	1540
	Cooling-H	2080	2120	2000	2050	1920	1970	1830	1870	—	1750	—	—

*Data includes a deduction of 0.08 in. wc for field-supplied filter. For units operating at 460 volts, use CFM values shown for 230 volts.
†Heating CFM values are with dry coil. Cooling CFM values are with wet coil.
—Indicates portions of the table that are not within the recommended operating range.

TABLE VII—AIR DELIVERY (CFM) AT INDICATED EXTERNAL STATIC PRESSURE AND VOLTAGE WITH FIELD-SUPPLIED FILTER*

586A/YACX†																	
	Application—Motor Speed	External Static Pressure—Inches wc															
		0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.9	
Size	Tap‡	208V	230V	208V	230V	208V	230V	208V	230V	208V	230V	208V	230V	208V	230V	208V	230V
036080	Heating-L	1360	1480	1320	1360	1280	1320	1210	1250	1130	1170	1010	1040	900	930	740	760
	Cooling-H	1660	1710	1580	1630	1470	1520	1370	1410	1240	1280	1100	1130	—	—	—	—
036100	Heating-L	1550	1600	1510	1560	1460	1510	1410	1450	1340	1380	1240	1280	1120	1150	740	760
	Cooling-L	1530	1580	1490	1540	1440	1480	1370	1410	1290	1330	1180	1220	—	1060	—	—
036125	Heating-M	1870	1930	1790	1850	1720	1770	1630	1680	1530	1580	1430	1470	1290	1330	—	—
	Cooling-L	1530	1580	1490	1540	1440	1480	1380	1420	1290	1330	1180	1220	—	1060	—	—
042100	Heating-L	1550	1600	1510	1560	1460	1510	1400	1450	1340	1380	1240	1280	1120	1150	—	—
	Cooling-M	1850	1890	1770	1810	1700	1730	1610	1640	1500	1530	1380	1410	1230	1250	—	—
042125	Heating-M	1870	1930	1790	1850	1720	1770	1630	1680	1530	1580	1430	1470	1290	1330	—	—
	Cooling-M	1850	1890	1770	1810	1700	1730	1610	1640	1500	1530	1380	1410	1230	1350	—	—
048125	Heating-M	1870	1930	1790	1850	1720	1770	1630	1680	1530	1580	1430	1470	1290	1330	—	—
	Cooling-H	2090	2130	1990	2030	1890	1930	1780	1820	1670	1700	1540	1570	—	1420	—	—
048150	Heating-H	2240	2290	2170	2210	2070	2110	1960	2000	1840	1880	1700	1730	1510	1540	—	—
	Cooling-H	2200	2240	2110	2150	2000	2040	1890	1930	1750	1790	1590	1620	—	—	—	—
060125	Heating-L	1620	1650	1560	1590	1490	1520	1420	1450	1330	1360	1230	1260	—	—	—	—
	Cooling-H	2410	2460	2320	2370	2230	2280	2140	2180	2020	2060	1890	1930	—	1770	—	—
060150	Heating-M	2080	2120	1990	2030	1890	1930	1790	1830	1700	1730	1590	1620	1470	1500	—	—
	Cooling-H	2410	2460	2320	2370	2230	2280	2140	2180	2020	2060	1890	1930	—	1770	—	—

*Data includes a deduction of 0.08 in. wc for field-supplied filter. For units operating at 460 volts, use CFM values shown for 230 volts.
†Air delivery data in this table also applies to the 585A/YAC and 585A/YACR with optional field-installed high-static blower installed.
‡Heating CFM values are with dry coil. Cooling CFM values are with wet coil.
—Indicates portions of the table that are not within the recommended operating range.

On units equipped with the RELITE pilot (Figure 14), gas flows to the pilot gas valve, which is inside of main gas valve (5D), when the pilot gas cock is open. Since the unit does not have a standing flame, the unit is now ready for a "call for heat" from the thermostat.

When the thermostat "calls for heating," terminal R "makes" to terminal W through the thermostat.

On units equipped with the glow-coil pilot, the circuit through the thermostat completes the circuit to the gas valve (5A).

On units equipped with the RELITE pilot, the circuit through the thermostat simultaneously energizes the pilot gas valve (permitting gas flow to the pilot) and the spark igniter, that sends a high-voltage charge to the pilot electrode. The pilot electrode sparks for approximately 5 to 10 seconds after a pilot flame is established. The pilot flame sensing probe senses the pilot flame and permits the circuit to the gas valve (5D) to be completed.

When the gas valve (5A or 5D) is energized, it opens and supplies gas to the burners. The pilot flame then ignites the burners.

The 821 heating blower relay (2G) was energized when the circuit through the thermostat was completed. After a short delay, the blower relay (2G) contacts close and the circuit to the blower motor (3D) is completed. This circuit energizes the motor to start the blower.

When the thermostat is satisfied, the circuit between R and W within the thermostat will break. On units equipped with the glow-coil pilot, the circuit to gas valve (5A) is deenergized and gas flow to the burners is stopped. On units equipped with the RELITE pilot, the broken thermostat circuit deenergizes the pilot gas valve and gas flow to both the pilot and the burners is stopped. Heating blower relay (2G) is also deenergized. There will be a delay before the heating relay (2G) contacts open. When these contacts do open, the blower motor (3D) is deenergized.

Both types (glow-coil or RELITE pilot) of units are now in a "standby" condition, waiting for the next "call for heat" from the thermostat.

G. Limit Switch Operation

The furnace limit switch (7K) functions to shut off gas and main burner operation if the furnace becomes overheated. See Figures 13 and 14. The limit switch is a temperature-actuated switch.

Terminal No. 1 of the limit switch is a common terminal and is internally connected to the switch terminal No. 3 as long as the temperature at the limit switch is below 175° 5°F. When the temperature near the limit switch rises to 175° 5°F, switch terminal No. 3 is opened, and terminal No. 2 is now internally connected to switch terminal No. 1. This breaks the circuit to the gas valve (5A or 5D) and shuts off all gas supply to the burners. The control circuit is still closed to blower relay (2G) and the blower motor (3D) will continue to run as long as the temperature is above the limit setting. When the temperature at the limit switch drops to 130° 5°F, switch terminal No. 3 will again be internally connected to switch terminal No. 1. The gas valve will again be energized and supply gas to the burners.

VIII. COOLING STARTUP AND ADJUSTMENTS

CAUTION: Complete the steps in Section VII before starting unit.

CAUTION: Do not jumper any safety devices when operating unit.

A. Checking Components

Perform the following steps before starting the unit.

1. Check for correct position of condenser fan blade in unit top panel. See Figure 3.
2. Leak-test all refrigerant circuit connections to make certain that none has been damaged in shipment.
3. Check entire system for leaks at all connections, including evaporator coil located in blower compartment. (Use electronic leak detector, halide torch, or liquid-soap solution.)

NOTE: The cooling section is fully charged with refrigerant, tested, and factory-sealed. **There should be no need to check refrigerant charge if no leaks were found.**

In rare instances, when the refrigerant charge may have been lost because of a leak caused by shipping or if a refrigerant leak has been found, proceed as follows:

a. Locate and repair leak.

WARNING: Never attempt to repair any soldered connection while system is under pressure. Severe bodily injury may result.

b. Leak-test unit.
c. Evacuate system.
d. Charge unit with proper type and amount of refrigerant.

CAUTION: The type and amount of refrigerant are listed on unit rating plate. It is recommended that a volumetric charging cylinder or an accurate scale be used when charging is necessary. Charge unit with exact amount of refrigerant as shown on unit rating plate.

4. Check to be sure all tools and loose parts have been removed.
5. Check to be sure all panels and covers are in place. Following this initial inspection, unit may be started.

NOTE: Check three-phase evaporator blower motor for correct rotation. Direction of rotation is indicated by arrow on blower housing. If blower rotates in opposite direction, reverse any two blower motor leads or any two line-voltage leads. After leads are reversed, recheck blower rotation.

B. Evaporator Airflow

All 585A/YAC, 585A/YACR, and 586A/YACX units are equipped with direct-drive blower motors. Motor speeds have been factory-set for both heating and cooling to obtain optimum performance. See Tables VI and VII to determine airflow. On most units the motor speeds cannot be adjusted; however, some units do have unused speed taps that are available. See the unit wiring label.

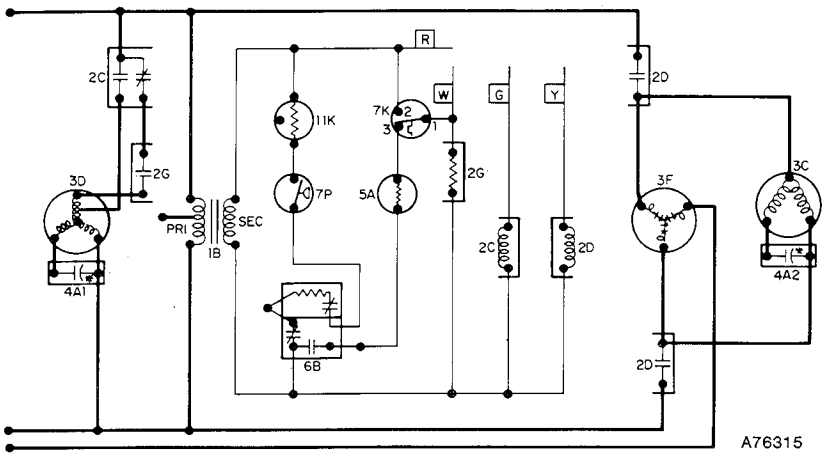
NOTE: Recommended evaporator airflow is 350 to 450 CFM per 12,000 Btuh of cooling.

NOTE: Optional field-installed high-static blower packages are available for the 585A/YAC and 585A/YACR, sizes 036080 through 060150. Refer to Table VII to determine the airflow for these optional blowers. (Same as blowers used in equivalent sizes of the 586A/YACX.)

C. Checking Unit Operation

Perform the following steps to make certain the unit is operating properly:

1. Place thermostat system switch in COOL position; place FAN switch in AUTO position; set thermostat setting below room temperature. Observe that compressor, con-

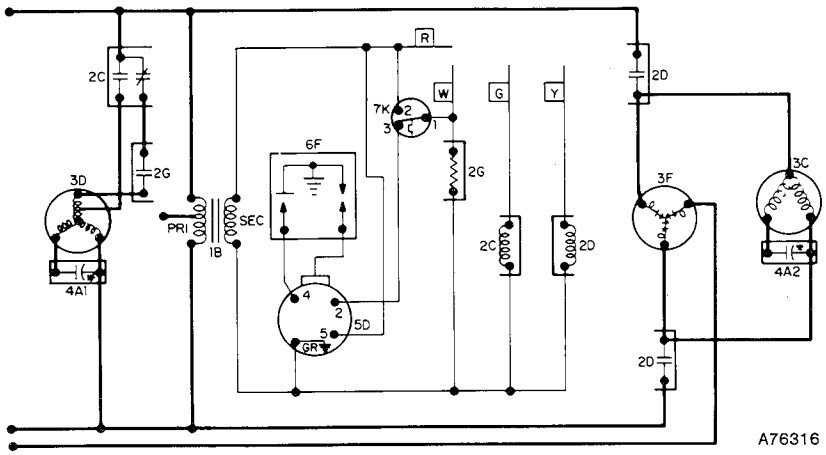


A76315

LEGEND

1B-Transformer
2C-Cool Relay (SPDT)
2D-Contactor (N. O.)
2G-Heat Relay (821) (N. O.)
3C-Condenser Motor
3D-Evap Blower Motor
3F-Compressor
4A1 & 4A2-Run Capacitors
5A-Gas Valve
6B-Pilot Reignition
7K-Limit Switch (SPDT)
7P-Pressure Switch (N. O.)
10B1 & 10B2-Connectors
11E-Chassis Ground
11K-Ballast Tube

Figure 13—Typical Line-to-Line Wiring Diagram for Units with Glow-Coil Pilot



A76316

LEGEND

1B-Transformer
2C-Cool Relay (SPDT)
2D-Contactor (N. O.)
2G-Heat Relay (821) (N. O.)
3C-Condenser Motor
3D-Evap. Blower Motor
3F-Compressor
4A1 & 4A2-Run Capacitors
5D-Gas Valve
6F-Pilot (Electronic Ignition)
7K-Limit Switch
10B1 & 10B2-Connectors
11E-Chassis Ground

Figure 14—Typical Line-to-Line Wiring Diagram for Units with RELITE Pilot

denser fan motor, and blower motor are all running. Observe that all motors stop when thermostat is satisfied.

2. Move thermostat fan switch to ON position. Observe that blower fan runs continuously with thermostat set above or below conditioned space temperature.

CAUTION: Do not rapid-cycle compressor. Allow 5 minutes between cycles. Rapid-cycling can cause compressor damage.

D. Sequence of Operation (Cooling)

The following sequence of operation pertains to Models 585A/YAC and 585A/YACR, 208- and 230-V units, sizes: 036080, 036125, 042100, 048125, and 048150; however, the sequence of operation of all units is very similar. Refer to the line-to-line wiring diagram in Figures 13 and 14.

NOTE: Although the unit wiring may vary slightly from that shown in Figures 13 and 14, the sequence of operation will not be affected.

With the thermostat system switch in COOL and FAN switch in AUTO, sequence of operation is as follows:

When there is demand for cooling by the thermostat, terminal R "makes" to terminals Y and G through the thermostat. This circuit connects to compressor contactor coil (2D) and cooling blower relay coil (2C) across the 24-volt secondary of the transformer (1A) to energize the compressor contactor and blower relay. The contacts of the energized blower relay (2C) close, completing the circuit through the single-phase blower motor (3D) and starting the motor instantly. The contacts of the energized compressor contactor (2D) close and complete the circuit through the compressor motor (3F) and condenser fan motor (3C), causing both motors to start instantly.

All motors will continue to run and the cooling cycle will remain "on" until the thermostat is satisfied. When the conditioned space temperature drops to the thermostat setting, the electrical connection from terminal R to terminals Y and G is opened in the thermostat. This open circuit deenergizes the compressor contactor coil (2D) and the cooling blower relay coil (2C). The blower, condenser, and compressor motors will instantly stop. The cooling will remain "off" until there is another demand for cooling by the thermostat.

IX. CARE AND MAINTENANCE

WARNING: Never place anything combustible on or in contact with the unit.

To ensure continuing high performance, and to minimize possible equipment failure, it is essential that periodic maintenance be performed on this equipment. Consult your local Dealer as to the proper frequency of maintenance and the availability of a maintenance contract.

The ability to properly perform maintenance on this equipment requires certain mechanical skills and tools. If you do not possess these, contact your Dealer for maintenance.

WARNING: Disconnect all electrical power to unit before performing any maintenance or service on unit.

TABLE VIII—HEATING SERVICE ANALYSIS CHART

SYMPTOM	CAUSE	REMEDY
Pilot will not light.	Pilot glow coil burned out. (585A/YAC)	Replace glow coil.
	No spark at electrode. (585A/YACR & 586A/YACX)	Check air gap between electric tip and pilot burner. Gap should be 3/32 (+ 0.025/-0.005). Readjust as necessary.
		Check moisture or dirt accumulation on electrode ceramic—clean ceramic with cloth.
		Cracked ceramic—replace pilot electrode assembly.
		Check for loose or broken wiring at and between electronic control box and electrode—replace wire as necessary.
		Check fuses or circuit breaker to insure voltage to unit.
		Check 24-volt input to electronic igniter control. If you find 24 volts and the above remedies have been explored, replace electronic igniter.
	Spark shorting out to main burner. (585A/YACR & 586A/YACX)	Realign electrode tip away from main burner but maintain spark gap to pilot burner.
	No gas at pilot burner (all units).	Check to see if pilot valve is opening. Check for loose or broken wiring connections. If no deficiency is found, replace pilot valve.
Burners will not ignite.	Water in gas line	Drain—install water trap.
	No power to furnace	Check power supply, fuses, wiring, or circuit breaker.
	No 24-volt power supply to control circuit	Check transformer—replace if necessary.
	Miswired or loose connections	Check all wiring and wirenut connections.
	Dirty pilot—yellow flame	Clean pilot orifice.
	Pilot burning properly—sharp blue flame	Replace pilot.
	Burned out heat anticipator in thermostat	Replace thermostat.
	No gas at main burners	Check to see if main gas valve is opening. Look for loose or broken wiring connections. If no defiiciency is found, replace valve assembly.
	Flame probe or connecting lead is shorted or open	Correct electric shorting or open circuit.
	Broken thermostat wire	Run continuity check to locate break.
Inadequate heating	Dirty air filter	Replace filter.
	Gas input to furnace too low	Check gas pressure at manifold. Clock gas meter for input. If too low, increase manifold pressure, or replace with correct orifices.
	Unit undersized for application	Replace with proper unit—or add additional unit.
	Restricted airflow	Clean or replace filter—or remove any restriction.
	Blower speed too low	Use faster speed tap—or install optional blower.
	Limit switch cycles main burners	OFF setting of fan control set too high—reset.
		Dirty air filters—clean or replace.
		Registers closed, restricted ductwork—open or remove restriction.
		Check heat anticipator setting on thermostat—readjust.
Poor flame characteristics	Incomplete combustion results in: Aldehyde odors, (CO), sooting flame—floating flame	Air shutters on burners closed—adjust to soft blue flame.
		Check all screws around flue outlets and burner compartment—tighten.
		LACK OF COMBUSTION AIR.
		Cracked heat exchanger—replace.
		Overfired furnace—reduce input, or change orifices.
		Check vent for restriction—clean as required.
		Check orifice to burner alignment.

The minimum maintenance that should be performed on this equipment is as follows:

1. Check air filter each month. Clean or replace as required.
2. Check cooling coil, drain pan, and condensate drain each cooling season for cleanliness. Clean as necessary.
3. Check blower motor and wheel for cleanliness and lubrication each heating and cooling season. Clean and lubricate as necessary.
4. Check electrical connections for tightness and controls for proper operation each heating and cooling season. Service as necessary.

CAUTION: Because of possible damage to the equipment or personal injury, maintenance should be performed by qualified persons only.

WARNING: As with any mechanical equipment, personal injury can result from sharp metal edges, etc.; therefore, be careful when removing parts.

A. Air Filter

Filters are not provided as an intergral part of the unit. A filter must be used with the unit and must be inspected frequently. When the filter becomes clogged with dust and lint, it should be replaced (disposable-type) or cleaned (cleanable-type). The filter should be inspected at least once each month, and replaced or cleaned at least twice during the year (more often, if necessary).

CAUTION: Do not operate the unit for any period of time without having a suitable filter in place in the return air duct system. Always replace filter with same size and type.

B. Lubrication

The fan and blower motors are prelubricated for 2 years of heavy duty or 5 years of normal duty. When lubrication is necessary, send the motor to an authorized motor repair shop.

C. Evaporator and Condenser Coils

CAUTION: Be sure all electrical power to the unit is turned OFF before cleaning coils.

The coils are easily cleaned when they are dry; therefore, they should be check and cleaned **before** each cooling season. The coils should be inspected periodically during the cooling season.

TABLE IX—COOLING SERVICE ANALYSIS CHART

SYMPTOM	CAUSE	REMEDY
Compressor and condenser fan will not start.	Power failure	Call power company.
	Fuse blown or circuit breaker tripped	Replace fuse or reset circuit breaker.
	Defective thermostat, contactor, transformer, or control relay	Replace component.
	Insufficient line voltage	Determine cause and correct.
	Incorrect or faulty wiring	Check wiring diagram and rewire correctly.
	Thermostat setting too high	Lower thermostat setting below room temperature.
Compressor will not start but condenser fan runs.	Faulty wiring or loose connections in compressor circuit	Check wiring and repair or replace.
	Compressor motor burned out, seized, or internal overload open	Determine cause. Replace compressor.
	Defective run/start capacitor, overload, start relay	Determine cause and replace.
	One leg of three-phase power dead	Replace fuse or reset circuit breaker. Determine cause.
Compressor cycles (other than normally satisfying thermostat)	Refrigerant overcharge or undercharge	Blow refrigerant, evacuate system, and recharge to nameplate.
	Defective compressor	Replace and determine cause.
	Insufficient line voltage	Determine cause and correct.
	Blocked condenser	Determine cause and correct.
	Defective run/start capacitor, overload, start relay, or reset relay	Determine cause and replace.
	Defective thermostat	Replace thermostat.
	Faulty condenser fan motor or capacitor	Replace.
	Restriction in refrigerant system	Locate restriction and remove.
Compressor operates continuously.	Dirty air filter	Replace filter.
	Unit undersized for load	Decrease load or increase unit size.
	Thermostat set too low	Reset thermostat.
	Low refrigerant charge	Locate leak, repair, and recharge.
	Leaking valves in compressor	Replace compressor.
	Air in system	Blow refrigerant, evacuate system, and recharge.
	Condenser coil dirty or restricted	Clean coil or remove restriction.
Excessive head pressure	Dirty air filter	Replace filter.
	Dirty condenser coil	Clean coil.
	Refrigerant overcharged	Purge excess refrigerant.
	Air in system	Blow refrigerant, evacuate system, and recharge.
	Condenser air restricted or air short cycling	Determine cause and correct.
Head pressure too low	Low refrigerant charge	Check for leaks, repair, and recharge.
	Compressor valves leaking	Replace compressor.
	Restriction in liquid line	Remove restriction.
Excessive suction pressure	High heat load	Check for source and eliminate.
	Compressor valves leaking	Replace compressor.
	Refrigerant overcharged	Purge excess refrigerant.
Suction pressure too low	Dirty air filter	Replace filter.
	Low refrigerant charge	Check for leaks, repair, and recharge.
	Metering device or low side restricted	Remove source of restriction.
	Insufficient evaporator airflow	Increase air quantity. Check filter—replace if necessary.
	Temperature too low in conditioned area	Reset thermostat.
	Outdoor ambient below 65°F	Install low-ambient kit.
	Filter-drier restricted	Replace.

If the coils are coated with dirt or lint, they should be vacuumed with a vacuum cleaner's soft brush attachment. **Be careful not to bend the fins.** If the coils are coated with oil or grease, they may be cleaned with a mild detergent and water solution. Rinse coils with clear water. Be careful not to splash water on motors, insulation, wiring, or filters.

D. Condensate Drain

The drain pan and condensate drain should be checked at the same time the cooling coils are checked. Clean the drain pan and condensate drain by removing any foreign matter from the pan. Flush pan and drain tube with clear water. If the drain tube is restricted, it can generally be cleared with high-pressure water. If this does not work, try a "plumber's snake" or similar probe device.

E. Evaporator Blower

The blower should be inspected at least once each year. Remove caked-on dirt from the blower wheel and housing with brush; remove grease with mild solvent. Make sure blower is centered in the blower housing.

F. Condenser Fan

The condenser fan should be kept free of all obstructions to ensure proper cooling. Do not set articles on top of the cooling unit that could possibly interfere with the airflow of the fan.

WARNING: Do not poke sticks, screwdrivers, or any other object into revolving fan blades—severe bodily injury may result.

The required fan position is shown in Figure 3. Adjust the fan position by loosening the setscrews and moving the fan up or down.

G. Electrical Controls and Wiring

With power disconnected to unit, check all electrical connections for tightness. Tighten all screws on connections. If any smoky or burned connections are noticed, disassemble tbe connection, clean all parts, strip wire, and reassemble properly and securely. Electrical controls are difficult to check without proper instrumentation; therefore, reconnect electrical power to unit and observe unit through one complete operating cycle. If there are any discrepancies in the operating cycle, contact your Dealer and request service.

H. Refrigerant Circuit

The refrigerant circuit is difficult to check for leaks without proper equipment. Therefore, if low-cooling performance is suspected, contact your local Dealer for service.

I. Cleaning the Heating Section

1. Turn off power to main disconnect switch.
2. Remove control access panel.
3. Turn off manual gas valve and pilot gas cock.
4. Disconnect pilot and escapement tubing.
5. Remove burners.
6. Remove flue baffle retainer and vent section shelf.
7. Remove flue baffle.
8. Clean passages with suitable brush.
9. Reassemble by reversing above procedure.